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EXAMINER	
MAURO JR, THOMAS J	

ART UNIT	PAPER NUMBER
2143	9

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/884,730	NELSON ET AL.	
	Examiner	Art Unit	
	Thomas J. Mauro Jr.	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 June 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2,8*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are pending and are presented for examination. A formal action on the merits of claims 1-24 follows.

Drawings

2. New corrected drawings are required in this application because the current drawings are not acceptable for reproducible quality due to dark shading making some figures and items unreadable. Under 37 CFR 1.84(l), drawings must be made by a process which will give them satisfactory reproduction characteristics. Every line, number, and letter must be durable, clean, black (except for color drawings), sufficiently dense and dark, and uniformly thick and well defined. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 23 and 41 of U.S. Patent No. 6,760,778. Although the conflicting claims are not identical, they are not patentably distinct from each other because they both recite analogous methods for communicating between airborne and ground based servers.

For example, claim 1 of the instant application recites establishing a radio connection between a moving object and a ground station, establishing a connection between a first ground station and a second ground station, bridging the path between them, transmitting data using a first and a second protocol and establishing a link layer connection using PPP. Similarly, claim 1 of U.S. Patent 6,760,778 discloses sending data from the first device to a first ground server using a first protocol using a radio communication link. Furthermore, the claim recites sending data packets from a first station to a second station, i.e. server using a second protocol. While U.S. 6,760,778 fails to explicitly show using a data link layer connection using a PPP, it would have been obvious to use such a connection along with PPP to further provide security and data integrity, something U.S. 6,760,778 is concerned with.

Additionally, claims 23 and 41 recite similar limitations and are therefore not patentably distinct.

5. Claims 1-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-16 of copending Application No. 09/884,724. Although the conflicting claims are not identical, they are not patentably distinct from each other because both recite analogous methods for aircraft data communication services for users to a ground station, i.e. server.

For example, claim 24 of the instant application recites a method of establishing a radio communication path between a moving object and a ground station in addition to including a software architecture having a system resources layer, a system services layer, an API layer and an application layer. Similarly, claim 16 of App. No. 09/884,724 recites a data communication server co-located within a moving object for establishing a radio communication path between a moving object and a ground station; and a software architecture having a system resources layer, a system services layer, an API layer and an application layer. Because both claims are similar, they are not patentably distinct. Similarly, other claims throughout the instant application and App. No. 09/884,724 recite material which is not patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau et al. (U.S. 6,249,913) in view of Grabowsky et al. (U.S. 6,181,990).

Regarding claim 1,Galipeau teaches a method of providing wireless data communication service between a moving object having a communication server and a first ground station, the method comprising:

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]**;

transmitting data to the second ground station via the first ground station using a first protocol associated with the radio communication path **[Galipeau Figure 12, Col. 12 lines 20-67 – Data is transmitted over a radio communication path to a ground station and then to a**

second ground station, i.e. ground server, by using a first protocol to transmit data from the air to the ground station, i.e. ANETP or ARINC].

Galipeau fails to explicitly teach a second protocol connection the ground station to a second ground station in addition to establishing a link layer connection between the moving object and the first ground station using a point-to-point protocol (PPP).

Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by making a link layer connection and using a peer-to-peer protocol (PPP) **[Grabowsky -- Col. 4 lines 24-38 and Col. 5 lines 11-27]**. In addition, a second protocol is used, namely UDP/IP to transmit the datagrams received to the flight operations center **[Grabowsky -- Col. 4 lines 24-67]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of a second protocol for ground transmission along with a PPP at a link layer, as taught by Grabowsky into the invention of Galipeau, in order to provide greater security and data integrity.

8. Claims 2-3, 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Rasanen (U.S. 6,646,998) and Grabowsky et al. (U.S. 6,181,990).

Regarding claim 2, Galipeau teaches a method of providing wireless data communication services comprising:

establishing a radio communication path, via a voice network, between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an Ethernet interface unit, an ISDN interface unit and a predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a voice network, i.e. NATS, is set up between onboard internet server and ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]** and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]**;

transmitting data to the second ground station via the first ground station using a first protocol associated with the radio communication path **[Galipeau Figure 12, Col. 12 lines 20-67 – Data is transmitted over a radio communication path to a ground station and then to a second ground station, i.e. ground server, by using a first protocol to transmit data from the air to the ground station, i.e. ANETP or ARINC]**.

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and channel assignment and further initiating standard call setup procedures and modem training, a second protocol connection the ground station to a second ground station in addition to establishing a link layer connection between the moving object and the first ground station using a point-to-point protocol (PPP).

Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message, assigning/allocating a radio channel and training, i.e. handshaking/negotiating, data rates and synchronizations for the call to proceed and transfer data **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

Furthermore, Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by making a link layer connection and using a peer-to-peer protocol (PPP) **[Grabowsky -- Col. 4 lines 24-38 and Col. 5 lines 11-**

27]. In addition, a second protocol is used, namely UDP/IP to transmit the datagrams received to the flight operations center **[Grabowsky -- Col. 4 lines 24-67]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request, acknowledgement, channel assignment and handshaking, as taught by Rasanen, in addition to the use of a second protocol for ground transmission along with a PPP at a link layer, as taught by Grabowsky into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and negotiate calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]** and to further provide greater security and data integrity.

Regarding claim 3, Galipeau-Rasanen-Grabowsky teach the invention substantially as claimed, as aforementioned in claim 2 above, including wherein the mobbing object is a flying vehicle, i.e. airplane **[Galipeau -- Col. 3 lines 52-54 and Col. 11 lines 51-53]**.

Regarding claim 10, Galipeau teaches a method of providing wireless data communication services comprising:

establishing a radio communication path, via an INMARSAT satellite system and using a packet data protocol, between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an

Ethernet interface unit, an ISDN interface unit and a predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a CEPT-E1 or T-1, i.e. packet data protocol, using an INMARSAT, is set up between onboard internet server and ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]** and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]**; and

transmitting data to said ground station over said INMARSAT satellite packet data network using an ARINC link **[Galipeau -- Figure 12 and Col. 12 lines 57-67 – ARINC is used to transmit data via INMARSAT satellites]**.

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and assigning a channel for the communication and data packets being IP packets.

Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message and assigning/allocating a radio channel **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

Furthermore, Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by encapsulating IP packets in a peer-to-peer protocol (PPP) frame **[Grabowsky -- Col. 4 lines 24-67 – Col. 5 lines 1-59]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request, acknowledgement and channel assignment, as taught by Rasanen, the encapsulation of IP data packets, as taught by Grabowsky into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and assign channels to calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]** and to further provide greater security and data integrity of IP data packets.

Regarding claim 17, Galipeau-Rasanen teach the invention substantially as claimed, as aforementioned in claim 15 above, including full and half rate channels **[Rasanen -- Col. 8 lines 7-18 and Col. 10 lines 28-47 – Full and half rate channels]**, but fail to explicitly teach

providing packet handling services including a radio data bridge via a data link layer protocol providing end-to-end correction.

Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by making a data link layer connection and using a peer-to-peer protocol (PPP) **[Grabowsky -- Col. 4 lines 24-38 and Col. 5 lines 11-27 – Data link layer protocol provides end to end error correction to insure data integrity]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of a data link layer protocol providing end to end correction, as taught by Grabowsky into the invention of Galipeau, in order to provide greater security and data integrity.

9. Claims 4-5, 7 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Rasanen (U.S. 6,646,998), Grabowsky et al. (U.S. 6,181,990) and Chen et al. (U.S. 5,412,660).

Regarding claim 4, Galipeau teaches a method of providing wireless data communication services comprising:

establishing a radio communication path, via a packet data network, between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an Ethernet interface unit, an ISDN interface unit and a

predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a CEPT-E1 or T-1, i.e. packet data network, is set up between onboard internet server and ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]** and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]**;

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and assigning a channel for the communication, a specific B-channel ISDN link and data packets being IP packets encapsulated in PPP.

Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message and assigning/allocating a radio

channel **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

In addition, Chen discloses a communication system which can transmit information using a standard ISDN channel-B **[Chen -- Col. 3 lines 7-17 and lines 35-48]**.

Furthermore, Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by encapsulating IP packets in a peer-to-peer protocol (PPP) frame **[Grabowsky -- Col. 4 lines 24-67 – Col. 5 lines 1-59]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request, acknowledgement and channel assignment, as taught by Rasanen, the encapsulation of IP data packets in a PPP protocol, as taught by Grabowsky, and the use of an ISDN channel-B for communicating in a packet switched network, as taught by Chen into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and assign channels to calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]**, to provide a reliable and fast ISDN communication link conforming to a standard that all standard equipment can interface with **[Chen Col. 1 lines 43-51]** and to further provide greater security and data integrity of IP data packets.

Regarding claim 5, this claim is similar to the method claimed in claim 3 above. It has similar limitations; therefore, claim 5 is rejected under the same rationale.

Regarding claim 7, Galipeau-Rasanen-Grabowsky-Chen teach the invention substantially as claimed, as aforementioned in claim 4 above, including wherein said radio communication path is shared by voice and data traffic **[Galipeau -- Col. 10 lines 39-46 – Data and telephony, i.e. voice, can be transmitted and received from the aircraft]**.

Regarding claim 22, Galipeau teaches a method of providing wireless data communication services, comprising:

establishing a radio communication path, via a packet data network, between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an Ethernet interface unit, an ISDN interface unit and a predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a CEPT-E1 or T-1, i.e. packet data network, is set up between onboard internet server and ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]** and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air**

to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN];

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and assigning a channel for the communication, a specific B-channel ISDN link and data packets being IP packets encapsulated in PPP providing end to end error correction.

Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message and assigning/allocating a radio channel **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

In addition, Chen discloses a communication system which can transmit information using a standard ISDN channel-B **[Chen -- Col. 3 lines 7-17 and lines 35-48]**.

Furthermore, Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by encapsulating IP packets in a peer-to-peer protocol (PPP) frame providing end to end error correction **[Grabowsky -- Col. 4 lines 24-67 – Col. 5 lines 1-59 – Data link layer protocol provides end to end error correction to insure data integrity]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request, acknowledgement and channel assignment, as taught by Rasanen, the encapsulation of IP data packets in a PPP protocol, as taught by Grabowsky, and the use of an ISDN channel-B for communicating in a packet switched network, as taught by Chen into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and assign channels to calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]**, to provide a reliable and fast ISDN communication link conforming to a standard that all standard equipment can interface with **[Chen Col. 1 lines 43-51]** and to further provide greater security and data integrity of IP data packets.

10. Claims 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913), Rasanen (U.S. 6,646,998), Grabowsky et al. (U.S. 6,181,990) and Chen et al. (U.S. 5,412,660), as applied to claim 4 above, in view of Rai et al. (U.S. 6,675,208).

Regarding claim 6, Galipeau-Rasanen-Grabowsky-Chen teach the invention substantially as claimed, as aforementioned in claim 4 above, but fail to explicitly teach tunneling the PPP frame using a tunneling protocol at layer 2.

Rai, however, discloses providing a connection between an IWF and a service providing server using a layer 2 tunneling protocol **[Rai -- Col. 8 lines 10-21]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of a layer 2 tunneling protocol, as taught by Rai into the invention of Galipeau-Rasanen-Grabowsky-Chen, in order to provide secure access to a private server over a public network.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Rasanen (U.S. 6,646,998), Grabowsky et al. (U.S. 6,181,990) and Hiett (U.S. 6,477,152).

Regarding claim 11, Galipeau teaches a method of providing wireless data communication services comprising:

establishing a radio communication path between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an Ethernet interface unit, an ISDN interface unit and a predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a CEPT-E1 or T-1, i.e. packet data protocol, using an satellite, is set up between onboard internet server and**

ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485] and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]**; and

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and assigning a channel for the communication, using a Direct Broadcast satellite system and internet service provider (ISP) and data packets being IP packets which contain a client IP.

Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message and assigning/allocating a radio channel **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

Furthermore, Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by encapsulating IP packets in a peer-to-peer protocol (PPP) frame which implicitly contains a client IP address within the packet header **[Grabowsky -- Col. 4 lines 24-67 – Col. 5 lines 1-59]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

Additionally, Hiett discloses a method for communicating data from an aircraft which includes establishing a communication path to an ISP using a direct broadcast satellite system **[Hiett -- Col. 2 lines 59-67 and Col. 4 lines 14-57]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request, acknowledgement and channel assignment, as taught by Rasanen, the encapsulation of IP data packets which contain a client IP address, as taught by Grabowsky, and the use of a DBS system and ISP to communicate, as taught by Hiett into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and assign channels to calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]**, to further provide greater security and data integrity of IP data packets and to provide greater bandwidth and higher data transfer rates via the DBS system **[Hiett -- Col. 3 lines 9-13]**.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Rasanen (U.S. 6,646,998) and Hiett (U.S. 6,477,152).

Regarding claim 12, Galipeau teaches a method of providing wireless data communication services comprising:

establishing a radio communication path, via a packet data network using circuit mode data, between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an Ethernet interface unit, an ISDN interface unit and a predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a CEPT-E1 or T-1, i.e. packet data network using NATS, i.e. circuit mode, is set up between onboard internet server and ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]** and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground**

internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]; and

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and channel assignment and further initiating standard call setup procedures and modem training, and using TCP/IP protocol. Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message, assigning/allocating a radio channel and training, i.e. handshaking/negotiating, data rates and synchronizations for the call to proceed and transfer data **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

In addition, Hiett discloses a method for communicating data from an aircraft which includes using a "Data 3" communications protocol, i.e. TCP/IP **[Hiett -- Col. 2 lines 35-57 and Col. 7 lines 2-25]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request, acknowledgement, channel assignment and handshaking, as taught by Rasanen and the use of a the use of an end-to-end transmission control protocol/Internet protocol (TCP/IP), as taught by Hiett into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and negotiate calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]** and to facilitate transmissions without the need for extensive services of

telecommunication companies, i.e. directly to a packet switched network at a ground station **[Hiett -- Col. 7 lines 5-11]**.

13. Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Rasanen (U.S. 6,646,998).

Regarding claim 15, Galipeau teaches a method of providing wireless data communication services comprising:

establishing a radio communication path, via a voice network, between a moving object and a first ground station using a data communication server co-located with the moving object, the data communication server including a plurality of interface units for accessing different data networks including an Ethernet interface unit, an ISDN interface unit and a predetermined wireless data network interface unit **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Radio communication path over a voice network, i.e. NATS, is set up between onboard internet server and ground station antenna. The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]** and

establishing a radio communication path between the moving object and a first ground station, establishing a connection between the first ground station and a second ground station

and bridging the radio communication path from the first ground station to the second ground station **[Galipeau -- Figure 12, Col. 10 lines 17-46, Col. 12 lines 12-36 and lines 45-67 – Air to ground protocol is used to establish radio communication between the on aircraft internet server and a ground station, i.e. antenna station. Ground station and ground internet server are connected via the PSTN. Radio communications are bridged from the antenna ground station to the ground server via the PSTN]**;

transmitting data and receiving data to the ground station over said packet data network **[Galipeau Figure 12, Col. 12 lines 20-67 – Data is transmitted/received over a radio communication path to a ground station and then to a second ground station, i.e. ground server, by using a first protocol to transmit data from the air to the ground station, i.e. ANETP or ARINC]**.

Galipeau fails to explicitly teach connection procedures including sending a channel request signal to the ground station, receiving an acknowledgement signal and assigning a channel for the communication.

Rasanen, however, discloses establishing a data connection in a mobile communication system which includes establishing radio connections using a call setup procedure including sending a call setup message, i.e. channel request, to the mobile communications network (MSC), receiving an acknowledgement, i.e. call proceeding message and assigning/allocating a radio channel **[Rasanen -- Col. 6 lines 49-58, lines 66-67, Col. 7 lines 1-45 and lines 46-54 and Col. 8 lines 1-32]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the connection and call setup procedures including request,

acknowledgement, channel assignment and handshaking, as taught by Rasanen into the invention of Galipeau, in order to provide the obvious underlying communication system to connect and negotiate calls with a plurality of data transmission rates **[Rasanen -- Col. 2 lines 38-40]**.

Regarding claim 18, Galipeau-Rasanen teach the invention substantially as claimed, as aforementioned in claim 15 above, including assigning an IP address to the ground station and allowing access only to authorized, i.e. authenticated, users **[Galipeau -- Figure 12 and Col. 11 lines 66-67 – Col. 12 lines 1-67 – Each server, in order to connect, is obviously assigned an IP address. System also includes authentication, which only allows authorized users, i.e. users with access, to access email, etc.]**.

14. Claims 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) and Rasanen (U.S. 6,646,998), as applied to claim 15 above, in view of Rai et al. (U.S. 6,675,208).

Regarding claim 16, Galipeau-Rasanen teach the invention substantially as claimed, as aforementioned in claim 15 above, including software architecture consisting of system resources, system services and application layers **[Galipeau Figure 12 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Applications consist of typical Internet applications, i.e. Internet Explorer, E-mail, etc., system services, such as TCP/IP and POP, and finally system**

resources which implicitly allow such functionality to be achieved, are all present].but fail to explicitly teach an API.

Rai, however, discloses a secure wireless data transmission system which uses API's to perform network management functions **[Rai -- Col. 37 lines 11-16]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of an API, as taught by Rai into the invention of Galipeau-Rasanen, in order to provide a more centralized and simplified manner to perform management functions.

Regarding claim 19, Galipeau-Rasanen teach the invention substantially as claimed, as aforementioned in claim 15 above, but fail to teach performing authentication procedures using a remote access dial-up service to a ground server before allowing access thereby securing said transmitted and received user information.

Rai, however, discloses providing a connection between an IWF and a service providing server which includes performing authentication using RADIUS **[Rai -- Col. 17 lines 47-67 – Col. 18 lines 1-15]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include performing authentication using RADIUS, as taught by Rai into the invention of Galipeau-Rasanen, in order to increase the level of security of the wireless data transmission system furthering the integrity of the data.

15. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913), Rasanen (U.S. 6,646,998), as applied to claims 15 and 20 above respectively, in view of Rai et al. (U.S. 6,675,208) and Reed et al. (U.S. 6,088,717).

Regarding claim 20, Galipeau-Rasanen teach the invention substantially as claimed, as aforementioned in claim 15 above, but fails to explicitly teach performing authentication procedures using a remote access dial-up service to a ground server before allowing access and securing said transmitted and received information using a PGP security protocol, including creating digital signatures by generating hash codes and encrypting the information.

Rai, however, discloses providing a connection between an IWF and a service providing server which includes performing authentication using RADIUS **[Rai -- Col. 17 lines 47-67 – Col. 18 lines 1-15]**.

In addition, Reed discloses securing transmitted and received information using PGP protocol with digital signatures using a hash code and keys to encrypt the information **[Reed -- Col. 107 lines 66-67 Col. 108 lines 1-67]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include performing authentication using RADIUS, as taught by Rai, along with the use of PGP protocol, digital signatures and keys to secure the transmitted and received information, as taught by Reed into the invention of Galipeau-Rasanen, in order to increase the level of security of the wireless data transmission system furthering the integrity of the data.

Regarding claim 21, Galipeau-Rasanen-Rai-Reed teach the invention substantially as claimed, as aforementioned in claim 20 above, including decrypting the keys and verifying the digital signatures **[Reed -- Col. 107 lines 66-67 Col. 108 lines 1-67 – Keys are decrypted and signatures verified to protect the integrity of the data]**.

16. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Rai et al. (U.S. 6,675,208).

Regarding claim 23, Galipeau teaches a data communication server for providing communication services, comprising:

a plurality of interface units, including an Ethernet interface unit, an ISDN interface unit and a pre-determined wireless data network interface unit, for accessing different data networks **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]**; and

a software architecture consisting of system resources, system services and application layers **[Galipeau Figure 12 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Applications consist of typical Internet applications, i.e. Internet Explorer, E-mail, etc., system services, such as TCP/IP and POP, and finally system resources which implicitly allow such functionality to be achieved, are all present]**.

Galipeau fails to explicitly teach an API.

Rai, however, discloses a secure wireless data transmission system which uses API's to perform network management functions **[Rai -- Col. 37 lines 11-16]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of an API, as taught by Rai into the invention of Galipeau-Rasanen, in order to provide a more centralized and simplified manner to perform management functions.

17. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Galipeau (U.S. 6,249,913) in view of Grabowsky et al. (U.S. 6,181,990) and Rai (U.S. 6,675,208).

Regarding claim 24, Galipeau teaches a system for providing communication services, comprising:

a plurality of interface units, including an Ethernet interface unit, an ISDN interface unit and a pre-determined wireless data network interface unit, for accessing different data networks **[Galipeau -- Figure 12, Col. 10 lines 39-46 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – The onboard internet server contains a plurality of interface units, including Ethernet, i.e. 100BaseT connection, ISDN, i.e. CEPT-E1 or T-1, and wireless data network, i.e. ARINC 429/485]**; and

a software architecture consisting of system resources, system services and application layers **[Galipeau Figure 12 and Col. 11 lines 51-67 – Col. 12 lines 1-67 – Applications consist**

of typical Internet applications, i.e. Internet Explorer, E-mail, etc., system services, such as TCP/IP and POP, and finally system resources which implicitly allow such functionality to be achieved, are all present].

Galipeau fails to explicitly teach an API and a data link connection across the communication path which includes end-to-end error correction, seizure override and hand-off capabilities for communication with a ground server.

Rai, however, discloses a secure wireless data transmission system which uses API's to perform network management functions **[Rai -- Col. 37 lines 11-16]**.

Furthermore, Grabowsky, in the same field of endeavor, discloses an aircraft flight data transmission system which transmits data to the ground station by encapsulating IP packets in a peer-to-peer protocol (PPP) frame providing end to end error correction **[Grabowsky -- Col. 4 lines 24-67 – Col. 5 lines 1-59 – Data link layer protocol provides end to end error correction to insure data integrity along with sequencing and hand-off capabilities]**.

Galipeau is concerned with authenticating, i.e. securing, data being transmitted on and off the aircraft **[Galipeau -- Col. 12 lines 41-44]**.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the use of an API, as taught by Rai, along with the use of a link layer protocol providing end to end error correction, sequencing and hand-off, as taught by Grabowsky into the invention of Galipeau-Rasanen, in order to provide a more centralized and simplified manner to perform management functions and to further provide greater security and data integrity of IP data packets.

Allowable Subject Matter

18. Claims 8-9 and 13-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Tu (U.S. 6,014,606) discloses a data transmission and reception system for use on aircraft which includes the use of INMARSAT satellites, ARINC and ISDN.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mauro Jr. whose telephone number is 571-272-3917. The examiner can normally be reached on M-F 8:00a.m. - 4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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TJM
November 8, 2004

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